

## Forensic Science | 5.2 Blood Spatter Analysis

You have been asked to be an expert witness in a trial involving bloodstain patterns. In order to explain your expert opinions to the jury, you went to your lab to recreate and recorded key patterns of blood spatter and staining from the case. The resulting videos of patterns are now ready for you to present to the jury, but you must explain them because the jury may not be familiar with some of the more advanced aspects of Bloodstain Pattern Analysis. View each of the video clips and then describe what is happening in the clip. Answer the questions to prepare you for your expert testimony and cross-examination.

### **Part 1: Transfer and Movement Patterns** (.5 points each = 6 points)

View the videos for this section as labeled below and answer the follow-up questions. Click on the links below to access the videos:

[Hatchet Castoff](#)

[Swipe](#)

[Wipe](#)

#### **“Hatchet Castoff”**

1. In which direction is the hatchet moving? Be sure to include description of both horizontal/vertical and left/right.

Right to left and slightly upwards

2. In which direction is the sharp side of the hatchet blade facing?

down

3. Describe the flight path of the blood droplets: (Hint-- where in particular is the blood casting off from on the hatchet?)

It's casting off the sharp edge

4. As the blood droplets hit the wall, in what direction are the tails facing?

The tails are facing down

5. Describe the resulting blood pattern on the wall:

castoff

#### **“Swipe”**

1. Did the person have blood on their finger before touching the Plexiglas surface?

yes

2. Describe the bloodstain pattern caused by the swipe:

It is a line in the shape of the movement of the finger

3. What do you notice at the end of the bloodstain where the finger left the Plexiglas surface?

It is rounded

#### **“Wipe”**

1. Did the finger have blood on it before touching the Plexiglas surface?

No

2. After the finger moved blood from the left and right side of the bloodstain, an outline of the outer edges of the bloodstain remained. Why would some blood remain and form this type of stain?

Because it dried first

3. Describe the bloodstain pattern that you saw in this wipe video:

passive

4. What is the difference between a wipe and a swipe?

Swipe has blood on the finger and wipe doesn't

### **Section 2: Projected Bloodstain Patterns** (10 points)

View the video clips below and answer the follow--up questions.

[44 caliber Bullet Impacting Blood Covered Sponge](#)

[Hammer on Hard Surface](#)

[Fist on Blood Covered Sponge](#)

[Shoe Stomp on Blood Covered Sponge](#)

[Cough with Blood](#)

#### **"44 caliber bullet impacting blood covered sponge"**

1. Pause the video clip just after the bullet exits at 1 second into the video clip so that you see both entry and exit blood spatter at the same time. Answer 1A, 1B, 2 and 3 using this point in the clip paused.

- a. Describe the shape of the blood spatter on the entry side:

Cone shaped

- b. Describe the shape of the blood spatter on the exit side:

Irregular shape

2. Is the bullet intact when it exits the sponge?

yes

3. Can you tell a difference in the size of the blood droplets on the entry side or exit side at this point?

no

4. Pause at 10 seconds and describe the size and flight path of the blood droplets on the entry side versus the exit side (Hint- indicate in which direction the blood is travelling on each side and describe the size of the droplets compared to each side).

The exit droplets are bigger. Both exit and entrance droplets are moving away from the sponge

5. List at least 2 other observations that you made about the blood spatter in this clip.

The blood went farther on the exit side. There was also more blood on the exit side.

#### **"Hammer on Hard Surface"**

1. Describe the bloodstain pattern on the wall made by the hammer.

splatter

2. Describe the bloodstain pattern on the floor made by the hammer. transfer

3. Why do you think the blood drops on the wall are so much larger than those made by the gunshot in the previous video clip of the 44-caliber bullet? **Because the hammer had a bigger area of impact**

### **“Fist on Blood Covered Sponge”**

1. Pause the clip at 10 seconds. Describe the flight path of the blood at that point.  
**Flying away in all directions from where it was hit**
2. After the clip has finished, describe the bloodstain pattern on the wall.  
**Splatter flying upwards from where it was hit**
3. In which direction are the tails of the blood drops on the left side of the wall facing?  
**Pointing right and down**
4. In which direction are the tails of the blood drops on the right side of the wall facing?  
**Pointing left and down**

### **“Shoe Stomp on Blood Covered Sponge”**

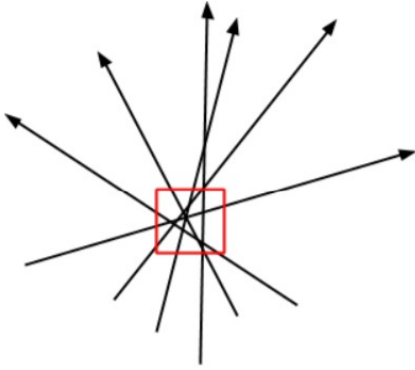
1. Describe the flight path of the blood droplets.  
**Flying left towards wall**
2. Why do the blood droplets retain a spherical shape in flight?  
**Because they are held together by friction**

### **“Cough with Blood”**

1. What is the official term for blood expelled by breathing or coughing?  
**Expiratory**
2. What is usually present in blood droplets expelled during coughing or breathing?  
**Droplets from lungs**
3. Did you see any air bubbles in the blood in this video?  
**no**
4. Describe the blood droplets as they left the lips (Hint- size, flight path, any unusual behaviors or observations).  
**Small, flying away from mouth, being affected by air that was being exhaled**

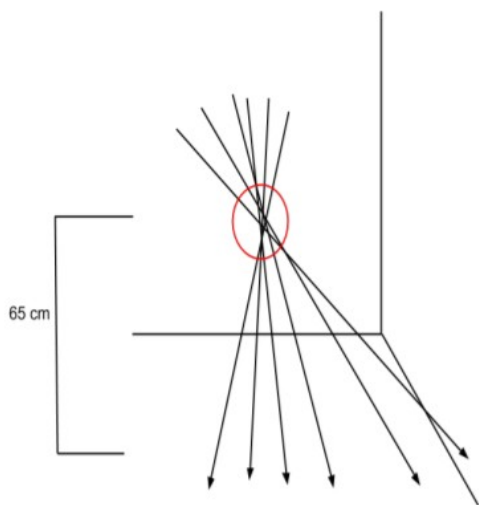
### **Section 3: Point of Convergence and Point of Origin** (1 point each = 4 points)

Identify the diagrams as either Point of Convergence or Point of Origin and answer the accompanying questions.



1. What is the diagram above depicting? How do you know this?

Something being hit and splattered in all directions because it shows that it is going all directions and similar distances.



2. What is the diagram above depicting? How do you know this?

Gunshot because there is splatter from the exit and entrance wounds and the entrance went less far

3. What is the difference between point of convergence and point of origin?

Point of origin is 3d point of convergence is 2d

4. Why is knowing the point of origin especially helpful in an investigation?

Because it can help tell what happened during a crime.